CLAIMS

1) Method for x-ray examination of an object where at least two categories of materials are taken into consideration, comprising: the use of broad spectrum x-rays; measurements of the x-rays by bands of the spectrum; expressions *(M?)* of thicknesses or masses of the two categories of materials passed through by the x-rays, the expressions *(M?)* being functions of at least two of the measurements (mes_k) and coefficients (A); and applying a selection criterion from among the expressions *(M?)* to deduce from this an expression *(*final *M?*) considered true; characterized in that the selection criterion comprises a combination (f) of the expressions with weighting factors (a), and a calculation of the weighting factors such that the combination has minimal noise calculated according to a noise level on the measurements.

2) Method according to claim 1, characterized in that the combination (f) of the expressions is linear,

3) Method according to claim 1, characterized in that the variation of the combination is calculated with a covariance matrix ($\Gamma_?$) of the *(M?)* expressions.

4) Method according to claim 1, characterized in that there are at least as many *(M?)* expressions as there are bands, and at least one, and are also established with one of the bands (io) and each of the other bands, respectively.

5) Method according to claim 1, characterized in that the coefficients (A) are determined in a preliminary calibration step,

6) Method according to claim 1, characterized in that it is applied to osteodensitometry,

7) Method according to claim 1, characterized in that it is applied to food-processing inspections,

8) Method according to claim 1, characterized in that it is applied to baggage inspection.